A. R. HAVENER.

HOPPER.

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1,130,898. Patented Mar. 9, 1915.

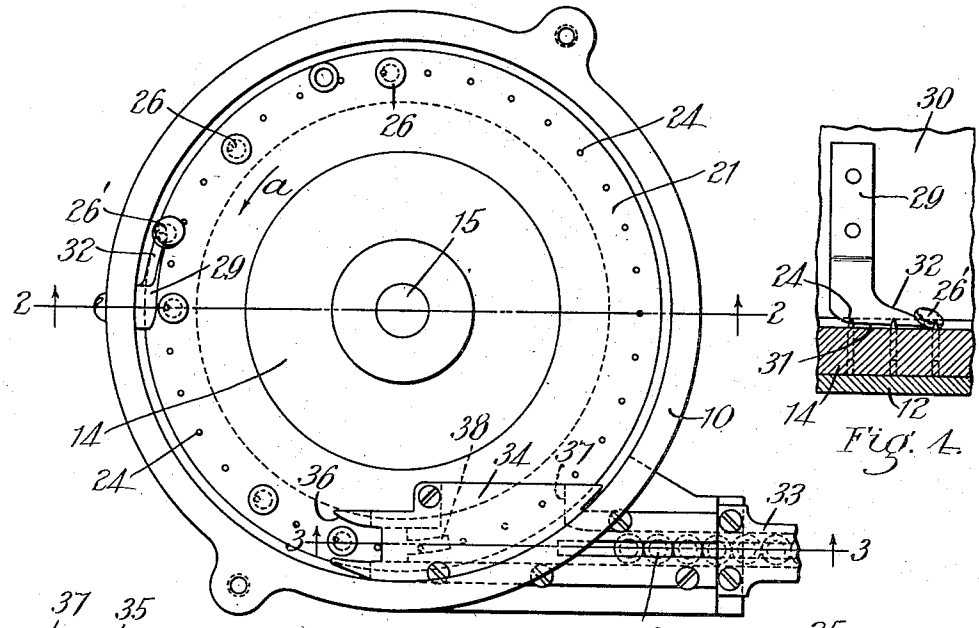


Fig. 1.

Fig. 4.

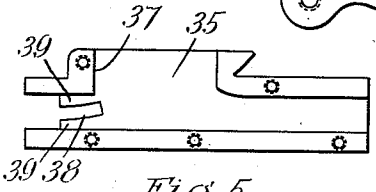


Fig. 5.

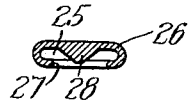


Fig. 6.

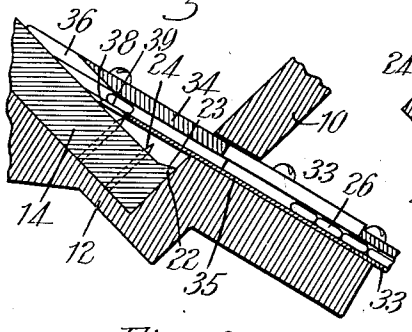


Fig. 3.

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

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HOPPER.

1,130,898. Specification of Letters Patent. Patented Mar. 9, 1915.

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To all whom it may concern:

Be it known that I, ARTHUR R. HAVENER, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Hoppers, of which the following is a specification.

This invention relates to a hopper for separating articles having a recess in one face thereof from a mass of the same and feeding them one by one to a raceway or chute. The hopper is particularly adapted for separating and feeding rivet caps which have a recess in one face thereof and a projection within said recess.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings: Figure 1 is a plan view of my improved hopper with the cover removed. Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1, with the cover in position. Fig. 3 is a sectional elevation taken on line 3—3 of Fig. 1. Fig. 4 is a detail sectional elevation taken on line 4—4 of Fig. 2. Fig. 5 is a detail plan of the remover plate. Fig. 6 is a sectional elevation enlarged of a rivet cap.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 10 is the casing of the hopper and 11 the cover. The casing 10 has a bracket 12 thereon by means of which it is fastened to the frame 13 of the machine in connection with which the hopper is to be used. A picker plate 14 is rotatably mounted in the casing 10 and is rotated by means of a shaft 15 fastened thereto by a pin 16 and journaled to rotate in a bearing 17 in the casing 10. A rotary motion is imparted to the picker plate by suitable mechanism connected to the shaft 15 by a universal joint 18 which is rotated by means of a shaft 19 journaled to rotate in a bearing 20 in the frame 13. The upper face 21 of the picker plate 14 is inclined and an annular flange 22 is provided on the upper face of said picker plate adjacent to the periphery thereof, the upper face 23 of said flange being inclined toward the upper face 21 of said picker plate.

A series of projections 24, preferably in the form of pins, are provided upon the picker plate 14 and each of these projections is so formed as to be adapted to project into a recess 25 in the rivet cap 26 between the edge 27 and the center of said cap and at one side only of said center. The projections or pins 24 are of less diameter where they project into said recess than one-half the width of said recess and said projections extend beyond the face 21 of the picker plate 14 to such an extent that the rivet cap will be tipped at an angle to the inclined face 21 of the picker plate when said rivet cap is engaged by one of said pins, as illustrated in Fig. 2.

The rivet caps 26 are each provided with a projection 28 in the center thereof which is located in the recess 25 and projects from the base of the rivet cap into said recess. The pins 24 extend into the recess 25 between the edge 27 and the projection 28 and hold the rivet cap suspended at an angle to the face 21 of the picker plate 14, as illustrated in Fig. 2.

A stationary deflector 29 is fastened to the wall 30 of the casing 10, the lower edge 31 of said deflector plate lying adjacent to the upper face of the picker plate 14, while the upper edge 32 of said deflector plate is inclined downwardly toward said upper face of the picker plate in a direction opposed to that in which that portion of said picker plate adjacent thereto is arranged to move, whereby any of the caps 26 into which said pins do not project will be deflected toward the lower end of said picker plate. The rivet caps pass out of the hopper onto a raceway 33 which projects into the interior of said hopper and is inclined at an angle to the inclined face 21 of the picker plate 14.

The portion of the raceway which projects into the hopper consists of a cover 34 and a base 35 which performs the function of removing the rivet caps from the pins in the picker plate. The cover 34 is slotted at 36 and its inner end lies in advance of the inner end of the remover plate 35. Said base has a slot 37 at one side thereof through which the rivet caps can pass back into the hopper when the raceway is filled up to said slot 37 with rivet caps. The upper end of the remover plate 35 is also slotted at 38 to allow the pins 24 to pass along beneath said remover plate and while said pins are so passing beneath said remover plate the

ears 39 project beneath the rivet cap on opposite sides of the pin 24 and lift said rivet cap off of said pin, allowing the same then to slide down the base 35 beneath the cover 34 onto the raceway 33.

The general operation of the device hereinbefore specifically described is as follows: Rivet caps in mass are placed in the casing 10 of the hopper until said casing is partly filled, the rivet caps being located in mass at the lower end of said hopper. The picker plate is rotated by any suitable means through the medium of the shaft 19, universal joint 18 and shaft 15 and as the picker plate passes around through the lower end of the casing the pins 24 pick up the rivet caps, each pin projecting into the recess 25 in the rivet cap between the edge 27 and the projection 28. Said rivet caps are then carried around as illustrated in Fig. 1 hanging by their upper edges on the ends of the pins 24 and with their lower edges resting against the inclined face 21 of the picker plate 14 as illustrated in Fig. 2.

All of the rivet caps which are engaged by the pins 24 in the manner illustrated in Fig. 2—that is, with their ends projecting into the recess 25, will be carried by said pins around to the slotted opening 36 in the cover 34 and as said pins feed the rivet cap forward still farther in the direction of the arrow *a* (Fig. 1) the pins will pass downwardly through the slot 38 in the remover plate 35 while the ears 39 will lift the rivet cap from the end of the pin 24 and said rivet cap will then slide down the base 35 and along the raceway 33.

When a rivet cap is not resting upon the end of a pin 24 it may assume the position illustrated by the rivet cap 26′ in Figs. 1 and 4 and in such a case the point of the deflector plate 29 will pass beneath said rivet cap and deflect the cap toward the lower end of the picker plate 14 where it will subsequently be picked up by one of the pins in the picker plate and carried up and around in the direction of the arrow *a* to the raceway as hereinbefore described.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. A hopper for feeding articles provided with a recess in one face thereof having, in combination, a casing, a picker plate rotatably mounted in said casing and having an inclined upper face and a projection on said upper face arranged to project into said recess between the edge and the center thereof and at one side only of said center.

2. A hopper for feeding articles provided with a recess in one face thereof having, in combination, a casing, a picker plate rotatably mounted in said casing and having an inclined upper face and a projection on said upper face arranged to project into said recess, said projection being of less diameter where it projects into said recess than one-half the width of said recess.

3. A hopper for feeding articles having a recess in one face thereof and a projection within said recess, said hopper having, in combination, a casing, a picker plate rotatably mounted in said casing and having an inclined upper face and a projection on said upper face arranged to project into said recess between the edge thereof and one side only of the projection on said rivet cap.

4. A hopper for feeding circular articles provided with a recess in one face thereof having, in combination, a casing, a picker plate rotatably mounted in said casing and having an inclined upper face and a series of pins concentrically arranged on said picker plate and projecting from said upper face, each of said pins arranged to project into said recess between the edge and the center thereof and at one side only of said center.

5. A hopper for feeding circular articles provided with a recess in one face thereof having, in combination, a casing, a picker plate rotatably mounted in said casing and having an inclined upper face, a series of pins concentrically arranged on said picker plate and projecting from said upper face, each of said pins arranged to project into said recess between the edge and the center thereof and at one side only of said center and a deflector plate located between said pins and the adjacent wall of said casing constructed and arranged to deflect any of said caps into which said pins do not project toward the lower end of said picker plate.

6. A hopper for feeding circular articles provided with a recess in one face thereof having, in combination, a casing, a picker plate rotatably mounted in said casing and having an inclined upper face, a series of pins concentrically arranged on said picker plate and projecting from said upper face, each of said pins arranged to project into said recess between the edge and the center thereof and at one side only of said center and a deflector plate located between said pins and the adjacent wall of said casing, the lower edge of said deflector plate lying adjacent to the upper face of said picker plate and the upper edge of said deflector plate being inclined downwardly toward the upper face of said picker plate in a direction opposed to that in which that portion of said picker plate adjacent thereto is arranged to move, whereby any of said caps into which said pins do not project will be deflected toward the lower end of said picker plate.

7. A hopper for feeding circular articles provided with a recess in one face thereof having, in combination, a casing, a picker plate rotatably mounted in said casing and

having an inclined upper face and an annular flange on said upper face adjacent to the periphery of said picker plate, the upper face of said flange being inclined toward the upper face of said picker plate, a series of pins concentrically arranged on said picker plate and projecting from said upper face, each of said pins arranged to project into said recess between the edge and the center thereof and at one side only of said center and a deflector plate located between said pins and the adjacent wall of said casing, the lower edge of said deflector plate lying adjacent to the upper face of said picker plate and the upper edge of said deflector plate being inclined downwardly toward the upper face of said picker plate in a direction opposed to that in which that portion of said picker plate adjacent thereto is arranged to move, whereby any of said caps into which said pins do not project will be deflected toward the lower end of said picker plate.

8. A hopper for feeding articles provided with a recess in one face thereof having, in combination, a casing, a picker plate rotatably mounted in said casing and having an inclined upper face and a projection on said upper face arranged to project into said recess between the edge and the center thereof and at one side only of said center, said projection being of sufficient length to tip said article at an angle to the inclined face of said picker plate.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ARTHUR R. HAVENER.

Witnesses:
SYDNEY E. TAFT,
MARGARET E. HORN.